Long-term SARS-CoV-2-specific immune and inflammatory responses in individuals recovering from COVID-19 with and without post-acute symptoms.

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Public Summary:
In Brief: co4+ and cos+ T cell responses following natural infection with COVIO-19 are stable over S months. Individuals with PASC demonstrate a lower frequency of cos+ T cells expressing CO107a, a marker of degranulation, and a more rapid decline in the frequency of N-specific interferony-producing cos+ T cells.

Scientific Abstract:
We describe severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-specific T cell responses, soluble markers of inflammation, and antibody levels and neutralization capacity longitudinally in 70 individuals with PCR-confirmed SARS-CoV-2 infection. Participants represent a spectrum of illness and recovery, including some with persistent viral shedding in saliva and many experiencing post-acute sequelae of SARS-CoV-2 infection (PASC). T cell responses remain stable for up to 9 months. Whereas the magnitude of early CD4(+) T cell immune responses correlates with severity of initial infection, pre-existing lung disease is independently associated with higher long-term SARS-CoV-2-specific CD8(+) T cell responses. Among participants with PASC 4 months following coronavirus disease 2019 (COVID-19) symptom onset, we observe a lower frequency of CD8(+) T cells expressing CD107a, a marker of degranulation, in response to Nucleocapsid (N) peptide pool stimulation, and a more rapid decline in the frequency of N-specific interferon-gamma-producing CD8(+) T cells. Neutralizing antibody levels strongly correlate with SARS-CoV-2-specific CD4(+) T cell responses.